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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
BELENA, JOHN F	

ART UNIT	PAPER NUMBER
3746	10

DATE MAILED: 06/09/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application N .	Applicant(s)	
	10/009,195	KOPKO, WILLIAM L.	
	Examiner	Art Unit	
	John F. Belena, Ph.D.	3746	

-- The MAILING DATE f this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *amendment received on 05/13/2003* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *77-81* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *77-81* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *18 April 2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

United States Patent & Trademark Office

DETAILED ACTION

RESPONSE TO ARGUMENTS

1. Applicant's arguments, see AMENDMENT, REMARKS subsection, filed on 05/13/2003 with respect to the rejection(s)of claim(s) 77 & 79 under (4,667,465) to Munk have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of ASME publication entitled "Supercharging of Gas Turbines by Forced Draft Fans With Evaporative Intercooling" to R. W. Foster-Pegg in view of (4,667,465) to Munk as set forth below under "CLAIM REJECTIONS - 35 USC § 103" subsection.

CLAIM REJECTIONS - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. **Claims 77-80** are rejected under 35 U.S.C. 102(b) as being anticipated by (2,678,531) to B. Miller.

B. Miller, Figures 2 & 3, disclose according to applicant's **claim 77**, a supercharged, power-producing gas turbine system, said system comprising: a gas turbine subsystem {[(22), (23), (24)] or [(42), (43), (44), (45), (46)]} and an electrical generator {load [(25)] or [(47)]}, said gas turbine subsystem comprising a compressor {[(22)] or [(42), (43)]}, a burner {[(29)] or [(52)]}, and a gas turbine {[(24)] or [(45), (46)]}, wherein a gas turbine subsystem input airstream {[(26), arrowed line exiting (28)] or [(48), arrowed line exiting (50)]} is compressed by said compressor {[(22)] or [(42), (43)]}, heated by said burner {[(29)] or [(52)]}, and expanded through

said turbine {[(24)] or [(45), (46)]}, to cause said turbine {[(24)] or [(45), (46)]} to rotate, whereby said turbine {[(24)] or [(45), (46)]} drives said generator {load [(25)] or [(47)]}, to generate electrical power; a supercharging subsystem comprising at least one supercharging {compressor} fan {[(21)] or [(41)]} which increases the pressure of said gas turbine subsystem input air stream {[(26), arrowed line exiting (28)] or [(48), arrowed line exiting (50)]}, whereby power output of said turbine {[(24)] or [(45), (46)]}, and hence electrical output of said electrical generator {load [(25)] or [(47)]}, may be {definitely} increased; and at least one fogger {[(49), (50)] or [(27), (28)]} located upstream of said gas turbine subsystem input airstream {[(26), arrowed line exiting (28)] or [(48), arrowed line exiting (50)]}, for providing a source of mist {See col. 7 lines 69-74} to humidify and cool said input airstream before it is inputted to said compressor {[(22)] or [(42), (43)]}. According to applicant's **claim 78**, at least one fogger {[(49)] or [(27)]} is located upstream of said {compressor} fan {[(21)] or [(41)]}. According to applicant's **claim 79,** the at least one fogger {[(28)] or [(50)]} is located between said {compressor} fan {[(21)] or [(41)]} and said compressor {[(22)] or [(42), (43)]}. According to applicant's **claim 80**, at least one fogger

{[(49)] or [(27)]} is located upstream of said {compressor} fan {[(21)] or [(41)]}, and a second fogger {[(28)] or [(50)]} is located between said fan {[(21)] or [(41)]} and said compressor {[(22)] or [(42), (43)]}. See B. Miller, Figures 1-3, and respective portions, col. 5 lines 47-76, col. 6 lines 1-6, col. 7 lines 47-76, col. 8 lines 1-22, col. 9 lines 22-35, of the detailed description.

4. **Claims 77 & 79** are rejected under 35 U.S.C. 102(b) as being anticipated by ASME publication entitled "Supercharging of Gas Turbines by Forced Draft Fans With Evaporative Intercooling" to R. W. Foster-Pegg.

R. W. Foster-Pegg, Figures 1 & 8, ***explicitly*** and ***implicitly*** teach within the article, according to applicant's **claim 77**, a supercharged, power-producing gas turbine system, said system comprising: a gas turbine subsystem and an electrical generator said gas turbine subsystem comprising a compressor, a burner, and a gas turbine, wherein a gas turbine subsystem input airstream is compressed by said compressor, heated by said burner, and expanded through said turbine, to cause said turbine to rotate, whereby said turbine drives said generator to generate electrical power; a supercharging subsystem comprising at least one

supercharging {Force Draft} fan which increases the pressure of said gas turbine subsystem input air stream , whereby power output of said turbine, and hence electrical output of said electrical generator, may be {definitely} increased; and at least one fogger {Generic Evaporative Cooler - water spray, fogger, is one commercially available type} located upstream of said gas turbine subsystem input airstream, for providing a source of mist to humidify and cool said input airstream before it is inputted to said compressor. According to applicant's **claim 79**, at least one fogger {Generic Evaporative Cooler - water spray, fogger, is one commercially available type} is located between said fan and said compressor {See Fig. 8}. See ASME publication entitled "Supercharging of Gas Turbines by Forced Draft Fans With Evaporative Intercooling" to R. W. Foster-Pegg, Figures 1 & 8, and respective portions, abstract, entire article and in particular, page 2, col. 2 lines 7-14 and col. 6 lines 35-53, of the detailed description.

5. **Claims 77-80** are rejected under 35 U.S.C. 102(b) as being anticipated by (GB 2280224 A) to Bronicki et al.

Bronicki et al., Figures 1-8, disclose according to applicant's **claim 77**, a supercharged, power-producing gas turbine system, said system comprising: a gas turbine subsystem {[(13), (14), (15), (16)] or [(220), (11)]} and an electrical generator {load (17)}, said gas turbine subsystem comprising a compressor (13), a burner (14), and a gas turbine (13), wherein a gas turbine subsystem input airstream {broken arrowed line on left-hand side of Fig. 8 before and after (223) or solid arrowed line before and after (20) in Fig. 2, or solid arrowed lines before and after (42)-(44) in Fig. 4} is compressed by said compressor (13), heated by said burner (14), and expanded through said turbine (13), to cause said turbine (15) to rotate, whereby said turbine (15) drives said generator {load (17)}, to generate electrical power; a supercharging subsystem comprising at least one supercharging {precompressor} fan {[(20)] or [(42), (43), (44)] or [(223)]} which increases the pressure of said gas turbine subsystem input air stream {broken arrowed line on left-hand side of Fig. 8 before (223) or solid arrowed line before (20) in Fig. 2, or solid arrowed lines before (42)-(44) in

Fig. 4} whereby power output of said turbine (15), and hence electrical output of said electrical generator {load (17)}, may be {definitely} increased; and at least one fogger {[(222), (224)] or [(48), (49), (50)] or [(21)]} located upstream of said gas turbine subsystem input airstream for providing a source of mist {See pg. 6 lines 11-15, Generic Evaporative Cooler – water spray, fogger, is one commercially available type} to humidify and cool said input airstream before it is inputted to said compressor {[(220)] or [(13)]}. According to applicant's **claim 78**, at least one fogger {[(222), (224)] or [(48), (49), (50)] or [(21)]} is located upstream of said {precompressor} fan {[(20)] or [(42), (43), (44)] or [(223)]}. According to applicant's **claim 79**, the at least one fogger {[(222), (224)] or [(48), (49), (50)] or [(21)]} is located between said {precompressor} fan {[(20)] or [(42), (43), (44)] or [(223)]} and said compressor {[(220)] or [(13)]}. According to applicant's **claim 80**, at least one fogger {[(222)], Fig. 8 teaches that [(48), (49), (50)] or [(21)] can be used like [(222)]} is located upstream of said {precompressor} fan {[(20)] or [(42), (43), (44)] or [(223)]} and a second fogger {[(224)] or [(48), (49), (50)] or [(21)]} is located between said fan {[(20)] or [(42), (43), (44)] or [(223)]} and said compressor {[(22o)] or [(13)]}. See Bronicki et al., Figures 1-8, and

respective portions, abstract, pg. 1 lines 5-28, pg. 6 lines 5-16, of the detailed description.

6. **Claims 77-80** are rejected under 35 U.S.C. 102(b) as being anticipated by article in Journal of Engineering for Gas Turbines and Power entitled "Advantages of Air Conditioning and Supercharging an LM6000 Gas Turbine Inlet" by Kolp et al.

Kolp et al., Figures 1, 12, 20 & 22, disclose according to applicant's **claim** 77, a supercharged, power-producing gas turbine system, said system comprising: a gas turbine subsystem {LM-6000} and an electrical generator, said gas turbine subsystem comprising a compressor, a burner, and a gas turbine, wherein a gas turbine subsystem input airstream {See Fig. 12 arrowed lines exiting LP Evap. & HP Evap.} is compressed by said compressor, heated by said burner, and expanded through said turbine, to cause said turbine to rotate, whereby said turbine drives said generator, to generate electrical power; a supercharging subsystem comprising at least one supercharging fan {See Fig. 12 & 20} which increases the pressure of said gas turbine subsystem input air stream {See Fig. 12 arrowed exit line

from supercharging fan} whereby power output of said turbine, and hence electrical output of said electrical generator, may be {definitely} increased; and at least one fogger ,{See Fig. 12, HP & LP Generic Evaporative Coolers - water spray, fogger, is one commercially available type} located upstream of said gas turbine subsystem input airstream for providing a source of mist {See Fig. 12, Generic Evaporative Cooler - water spray, fogger, is one commercially available type} to humidify and cool said input airstream before it is inputted to said compressor. According to applicant's **claim 78,** at least one fogger {See Fig. 12, LP Generic Evaporator Cooler - water spray, fogger, is one commercially available type} is located upstream of said {supercharger} fan {See Fig. 12}. According to applicant's **claim 79,** the at least one fogger {See Fig. 12, HP Generic Evaporator Cooler - water spray, fogger, is one commercially available type} is located between said {supercharger} fan and said compressor. According to applicant's **claim 80,** at least one fogger {See Fig. 12, LP Generic Evaporator Cooler - water spray, fogger, is one commercially available type} is located upstream of said {supercharger} fan and a second fogger {See Fig. 12, HP Generic Evaporator Cooler - water spray, fogger, is one commercially available

type} is located between said fan and said compressor. See article in Journal of Engineering for Gas Turbines and Power entitled "Advantages of Air Conditioning and Supercharging an LM6000 Gas Turbine Inlet" by Kolp et al., Figures 1, 12, 20 & 22, and respective portions, abstract, entire article and particularly, pg. 513, subheading "Simple Cycle" lines 1-20, pg. 515 lines 48-54, pg. 516 lines 1-4 and pg. 523 lines 10-14, of the detailed description.

7. **Claims 77-80** are rejected under 35 U.S.C. 102(b) as being anticipated by ASME technical publication entitled "Benefits of Compressor Inlet Air Cooling For Gas Turbine Cogeneration Plants" to De Lucia et al.

De Lucia et al. discloses the use of Evaporative Cooling in lowering compressor inlet air in power plants generating electricity and incorporates within publication the article in Journal of Engineering for Gas Turbines and Power entitled "Advantages of Air Conditioning and Supercharging an LM6000 Gas Turbine Inlet" by Kolp et al. which has been used to reject claims 77-80 as set forth above in paragraph 5. See De Lucia et al. and respective portions, abstract, entire article and particularly pg. 2, lines 1-18,

of the detailed description. See the article in Journal of Engineering for Gas Turbines and Power entitled "Advantages of Air Conditioning and Supercharging an LM6000 Gas Turbine Inlet" by Kolp et al., Figures 1, 12, 20 & 22, and respective portions, abstract, entire article and particularly, pg. 513, subheading "Simple Cycle" lines 1-20, pg. 515 lines 48-54, pg. 516 lines 1-4 and pg. 523 lines 10-14, of the detailed description.

CLAIM REJECTIONS - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. **Claims 77-80** are rejected under 35 U.S.C. 103(a) as being unpatentable over (6,012,279) to Hines in view of article in Journal of Engineering for Gas Turbines and Power entitled "Advantages of Air

Conditioning and Supercharging an LM6000 Gas Turbine Inlet" by Kolp et al.

Hines, Figures 1-3, disclose according to applicant's **claim 77**, a supercharged, power-producing gas turbine system, said system comprising: a gas turbine subsystem {[(14), (16), (18), (20), (22)] or [(54), (56), (58), (60), (62)]} said gas turbine subsystem comprising a compressor {[(14)] or [(54)]}, a burner {[(16)] or [(56)]}, and a gas turbine {[(18), (20), (22)] or [(58), (60), (62)]}, wherein a gas turbine subsystem input airstream is compressed by said compressor {[(14)] or [(54)]}, heated by said burner {[(16)] or [(56)]}, and expanded through said turbine {[(18), (20), (22)] or [(58), (60), (62)]}, to cause said turbine {[(18), (20), (22)] or [(58), (60), (62)]}, to rotate, a supercharging subsystem comprising at least one supercharging {See abstract - precompressor, See Col. 5 line 58 - booster} fan {[(12)] or [(52)]} which increases the pressure of said gas turbine subsystem input air stream whereby power output of said turbine {[(18), (20), (22)] or [(58), (60), (62)]}, may be {definitely} increased; and at least one fogger {[(24)] or [(64)]}, located upstream of said gas turbine subsystem input airstream for providing a source of {water spray} mist to humidify and cool said input

airstream before it is inputted to said compressor {[(14)] or [(54)]}. According to applicant's **claim 78**, at least one fogger {[(24)] or [(64) applied according to example (24)]}, is located upstream of said {Supercharger, See abstract - precompressor, See Col. 5 line 58 - booster} fan {[(12)] or [(52)]}. According to applicant's **claim 79,** the at least one fogger {[(24)] or [(64)]} is located between said {Supercharger, See abstract - precompressor, See Col. 5 line 58 - booster} fan {[(12)] or [(52)]} and said compressor {[(14)] or [(54)]}. According to applicant's **claim 80**, at least one fogger (24) is located upstream of said {Supercharger, See abstract - precompressor, See Col. 5 line 58 - booster} fan {[(12)] or [(52)]} and a second fogger {[(24)] or [(64)]} is located between said fan {[(12)] or [(52)]} and said compressor {[(14)] or [(54)]}. See Hines, Figures 1-3, and respective portions, abstract, col. 2 lines 27-62 and col. 5 lines 54-61, of the detailed description.

Hines does not disclose a turbine driving an electrical generator to generate electrical power. The article in Journal of Engineering for Gas Turbines and Power entitled "Advantages of Air Conditioning and Supercharging an LM6000 Gas Turbine Inlet" by Kolp et al. discloses in Fig. 12 a supercharged gas turbine system where the gas turbine system

turbine drives a generator, to generate electrical power. See article in Journal of Engineering for Gas Turbines and Power entitled "Advantages of Air Conditioning and Supercharging an LM6000 Gas Turbine Inlet" by Kolp et al., Figures 1, 12, 20 & 22, and respective portions, abstract, entire article and particularly, pg. 513, subheading "Simple Cycle" lines 1-20, pg. 515 lines 48-54, pg. 516 lines 1-4 and pg. 523 lines 10-14, of the detailed description.

It would have been obvious to an artisan of ordinary skill in the art at the time the invention was made to take the gas turbine engine invention of Hines and modify it according to article in Journal of Engineering for Gas Turbines and Power entitled "Advantages of Air Conditioning and Supercharging an LM6000 Gas Turbine Inlet" by Kolp et al. and drive an electrical generator so as to produce electrical power in a land or air power plant.

10. **Claims 77-80** are rejected under 35 U.S.C. 103(a) as being unpatentable over article in Journal of Engineering for Gas Turbines and Power entitled "Advantages of Air Conditioning and Supercharging an

LM6000 Gas Turbine Inlet" by Kolp et al., as applied to claims 77-80 in paragraph 6 above, and further in view of article entitled "EPRI Technology to Enhance Combustion Turbine Output" to Generation Group of EPRI.

As set forth above in the rejection of claims 77-80, the article in Journal of Engineering for Gas Turbines and Power entitled "Advantages of Air Conditioning and Supercharging an LM6000 Gas Turbine Inlet" by Kolp et al. describes the invention substantially as claimed. The article in Journal of Engineering for Gas Turbines and Power entitled "Advantages of Air Conditioning and Supercharging an LM6000 Gas Turbine Inlet" by Kolp et al. does implicitly but not explicitly disclose the evaporative coolers to be a water spray mist fogger system.

The article entitled "EPRI Technology to Enhance Combustion Turbine Output" to Generation Group of EPRI teaches evaporative coolers of the water spray mist fogger system type. See article entitled "EPRI Technology to Enhance Combustion Turbine Output" to Generation Group of EPRI in its entirety.

It would have been obvious to an artisan of ordinary skill in the art at the time the invention was made to take the invention of Kolp et al. and use evaporative coolers of the water spray mist fogger system type so as to cool and humidify the air input stream entering the gas turbine system.

11. **Claims 77-80** are rejected under 35 U.S.C. 103(a) as being unpatentable over article in Journal of Engineering for Gas Turbines and Power entitled "Advantages of Air Conditioning and Supercharging an LM6000 Gas Turbine Inlet" by Kolp et al., as applied to claims 77-80 in paragraph 6 above, and further in view of (4,418,527) to Schlom et al.

As set forth above in the rejection of claims 77-80, the article in Journal of Engineering for Gas Turbines and Power entitled "Advantages of Air Conditioning and Supercharging an LM6000 Gas Turbine Inlet" by Kolp et al. describes the invention substantially as claimed. The article in Journal of Engineering for Gas Turbines and Power entitled "Advantages of Air Conditioning and Supercharging an LM6000 Gas Turbine Inlet" by Kolp et al. does implicitly but not explicitly disclose the evaporative coolers

to be a water spray mist fogger system using demineralized or distilled water.

Schlom et al., Figures 1 & 2, disclose an evaporative precooling system (12) using demineralized or distilled water for cooling, cleaning and humidifying air entering an air breathing gas turbine (14). See Schlom et al., Figures 1 & 2, and respective portions, abstract, col. 2 lines 1-68 & col. 3 lines 1-42, of the detailed description.

It would have been obvious to an artisan of ordinary skill in the art at the time the invention was made to take the invention of Kolp et al. and use evaporative precoolers as taught by Schlom et al. using demineralized or distilled water so as to cool and humidify the air stream entering the gas turbine system.

12. **Claims 77-80** are rejected under 35 U.S.C. 103(a) as being unpatentable over ASME technical publication entitled "Benefits of Compressor Inlet Air Cooling For Gas Turbine Cogeneration Plants" to De Lucia et al. as applied to claims 77-80 in paragraph 7 above, and further in view of (4,418,527) to Schlom et al.

As set forth above in the rejection of claims 77-80, the ASME technical publication entitled "Benefits of Compressor Inlet Air Cooling For Gas Turbine Cogeneration Plants" to De Lucia et al. describes the invention substantially as claimed. The ASME technical publication entitled "Benefits of Compressor Inlet Air Cooling For Gas Turbine Cogeneration Plants" to De Lucia et al. does implicitly but not explicitly disclose the evaporative coolers to be a water spray mist fogger system using demineralized or distilled water.

Schlom et al., Figures 1 & 2, disclose an evaporative precooling system (12) using demineralized or distilled water for cooling, cleaning and humidifying air entering an air breathing gas turbine (14). See Schlom et al., Figures 1 & 2, and respective portions, abstract, col. 2 lines 1-68 & col. 3 lines 1-42, of the detailed description.

It would have been obvious to an artisan of ordinary skill in the art at the time the invention was made to take the invention of De Lucia et al. and use evaporative precoolers as taught by Schlom et al. using ***demineralized or distilled water*** so as to cool and humidify the air stream entering the gas turbine system.

13. **Claims 77-80** are rejected under 35 U.S.C. 103(a) as being unpatentable over ASME technical publication entitled "Benefits of Compressor Inlet Air Cooling For Gas Turbine Cogeneration Plants" to De Lucia et al. as applied to claims 77-80 in paragraph 7 above, and further in view of article entitled "EPRI Technology to Enhance Combustion Turbine Output" to Generation Group of EPRI.

As set forth above in the rejection of claims 77-80, the ASME technical publication entitled "Benefits of Compressor Inlet Air Cooling For Gas Turbine Cogeneration Plants" to De Lucia et al. describes the invention substantially as claimed. The ASME technical publication entitled "Benefits of Compressor Inlet Air Cooling For Gas Turbine Cogeneration Plants" to De Lucia et al. does implicitly but not explicitly disclose the evaporative coolers to be a water spray mist fogger system type.

The article entitled "EPRI Technology to Enhance Combustion Turbine Output" to Generation Group of EPRI teaches evaporative coolers of the water spray mist fogger system type. See article entitled "EPRI

Technology to Enhance Combustion Turbine Output" to Generation Group of EPRI in its entirety.

It would have been obvious to an artisan of ordinary skill in the art at the time the invention was made to take the invention of De Lucia et al. and use evaporative coolers of the water spray mist fogger system type so as to cool and humidify the air input stream entering the gas turbine system.

14. **Claims 77-80** are rejected under 35 U.S.C. 103(a) as being unpatentable over (GB 2280224 A) to Bronicki et al. as applied to claims 77-80 in paragraph 5 above, and further in view of (4,418,527) to Schlom et al.

As set forth above in the rejection of claims 77-80, the patent (GB 2280224 A) to Bronicki et al. describes the invention substantially as claimed. The patent (GB 2280224 A) to Bronicki et al. does not explicitly disclose the evaporative coolers to be a water spray mist fogger system using demineralized or distilled water.

Schlom et al., Figures 1 & 2, disclose an evaporative precooling system (12) using demineralized or distilled water for cooling, cleaning and

humidifying air entering an air breathing gas turbine (14). See Schlom et al., Figures 1 & 2, and respective portions, abstract, col. 2 lines 1-68 & col. 3 lines 1-42, of the detailed description.

It would have been obvious to an artisan of ordinary skill in the art at the time the invention was made to take the invention of Bronicki et al. and use evaporative precoolers as taught by Schlom et al. using ***demineralized or distilled water*** so as to cool and humidify the air stream entering the gas turbine system.

15. Claims 77-80 are rejected under 35 U.S.C. 103(a) as being unpatentable over ASME publication entitled "Supercharging of Gas Turbines by Forced Draft Fans With Evaporative Intercooling" to R. W. Foster-Pegg as applied to claims 77-80 in paragraph 4 above, and further in view of article entitled "EPRI Technology to Enhance Combustion Turbine Output" to Generation Group of EPRI.

As set forth above in the rejection of claims 77-80, the ASME publication entitled "Supercharging of Gas Turbines by Forced Draft Fans With Evaporative Intercooling" to R. W. Foster-Pegg describes the

invention substantially as claimed. The ASME publication entitled "Supercharging of Gas Turbines by Forced Draft Fans With Evaporative Intercooling" to R. W. Foster-Pegg does implicitly but not explicitly disclose the evaporative coolers to be a water spray mist fogger system type.

The article entitled "EPRI Technology to Enhance Combustion Turbine Output" to Generation Group of EPRI teaches evaporative coolers of the water spray mist fogger system type. See article entitled "EPRI Technology to Enhance Combustion Turbine Output" to Generation Group of EPRI in its entirety.

It would have been obvious to an artisan of ordinary skill in the art at the time the invention was made to take the invention of R.W. Foster-Pegg and use evaporative coolers of the water spray mist fogger system type so as to cool and humidify the air input stream entering the gas turbine system.

16. **Claims 77, 79 & 81** are rejected under 35 U.S.C. 103(a) as being unpatentable over ASME publication entitled "Supercharging of Gas Turbines by Forced Draft Fans With Evaporative Intercooling" to R. W. Foster-Pegg as applied to claims 77 & 79 in paragraph 4 above, and further in view of (4,667,465) to Munk.

As set forth above in the rejection of claims 77 & 79 ASME publication entitled "Supercharging of Gas Turbines by Forced Draft Fans With Evaporative Intercooling" to R. W. Foster-Pegg describes the invention substantially as claimed. ASME publication entitled "Supercharging of Gas Turbines by Forced Draft Fans With Evaporative Intercooling" to R. W. Foster-Pegg does not disclose a system controller or processor monitoring at least one system parameter and controlling operation of at least one fogger.

Munk, Figures 1-8 discloses a processor (500) which is a general or special purpose digital or analog processor or a microprocessor such as sold by Zilog Corporation which receives an input from NO_x sensing unit (300) {The sensing unit can be of other types such as: temperature, O_2, CO,

CO_2, H_2O, etc.} to generate control signals to control compressed air supply (291) and pressurized water supply (292) to fogging units (250). See Munk, Figures 1-8, and respective portions, abstract, col. 5 lines 3-63 of the detailed description.

It would have been obvious to an artisan of ordinary skill in the art at the time the invention was made to take the invention of R. W. Foster-Pegg and use as taught by Munk a system processor or microprocessor controller to monitor at least one system parameter and control the operation of at least one water fogger so as to monitor the ambient temperature and control turbine power output so that as ambient temperature decreases the maximum supercharged summer-peaking power output is not exceeded.

17. Claims 77-81 are rejected under 35 U.S.C. 103(a) as being unpatentable over (2,678,531) to B. Miller as applied to claims 77-80 in paragraph 3 above, and further in view of (4,667,465) to Munk.

As set forth above in the rejections of claims 77-80, B. Miller discloses the invention substantially as claimed. B. Miller does not disclose a system

controller or processor monitoring at least one system parameter and controlling operation of at least one fogger.

Munk, Figures 1-8 discloses a processor (500) which is a general or special purpose digital or analog processor or a microprocessor such as sold by Zilog Corporation which receives an input from NO_x sensing unit (300) {The sensing unit can be of other types such as: temperature, O_2, CO, CO_2, H_2O, etc.} to generate control signals to control compressed air supply (291) and pressurized water supply (292) to fogging units (250). See Munk, Figures 1-8, and respective portions, abstract, col. 5 lines 3-63 of the detailed description.

It would have been obvious to an artisan of ordinary skill in the art at the time the invention was made to take the invention of B. Miller and use as taught by Munk a system processor or microprocessor controller to monitor at least one system parameter and control the operation of at least one water fogger so as to monitor the ambient temperature and control turbine power output so that as ambient temperature decreases the maximum supercharged summer-peaking power output is not exceeded.

18. Claims 77-81 are rejected under 35 U.S.C. 103(a) as being unpatentable over (GB 2280224 A) to Bronicki et al. as applied to claims 77-80 in paragraph 5 above, and further in view of (4,667,465) to Munk.

As set forth above in the rejection of claims 77-80, Bronicki et al. discloses the invention substantially as claimed. Bronicki et al. does not disclose a system controller or processor monitoring at least one system parameter and controlling operation of at least one fogger.

Munk, Figures 1-8 discloses a processor (500) which is a general or special purpose digital or analog processor or a microprocessor such as sold by Zilog Corporation which receives an input from NO_x sensing unit (300) {The sensing unit can be of other types such as: temperature, O_2, CO, CO_2, H_2O, etc.} to generate control signals to control compressed air supply (291) and pressurized water supply (292) to fogging units (250). See Munk, Figures 1-8, and respective portions, abstract, col. 5 lines 3-63 of the detailed description.

It would have been obvious to an artisan of ordinary skill in the art at the time the invention was made to take the invention of Bronicki et al. and use as taught by Munk a system processor or microprocessor controller to

monitor at least one system parameter and control the operation of at least one water fogger so as to monitor the ambient temperature and control turbine power output so that as ambient temperature decreases the maximum supercharged summer-peaking power output is not exceeded.

19. **Claims 77-81** are rejected under 35 U.S.C. 103(a) as being unpatentable over article in Journal of Engineering for Gas Turbines and Power entitled "Advantages of Air Conditioning and Supercharging an LM6000 Gas Turbine Inlet" by Kolp et al. as applied to claims 77-80 in paragraph 6 above, and further in view of (4,667,465) to Munk.

As set forth above in the rejection of claims 77-80, Kolp et al. discloses the invention substantially as claimed. Kolp et al. does not disclose a system controller or processor monitoring at least one system parameter and controlling operation of at least one fogger.

Munk, Figures 1-8 discloses a processor (500) which is a general or special purpose digital or analog processor or a microprocessor such as sold by Zilog Corporation which receives an input from NO_x sensing unit (300) {The sensing unit can be of other types such as: temperature, O_2, CO,

CO_2, H_2O, etc.} to generate control signals to control compressed air supply (291) and pressurized water supply (292) to fogging units (250). See Munk, Figures 1-8, and respective portions, abstract, col. 5 lines 3-63 of the detailed description.

It would have been obvious to an artisan of ordinary skill in the art at the time the invention was made to take the invention of Kolp et al. and use as taught by Munk a system processor or microprocessor controller to monitor at least one system parameter and control the operation of at least one water fogger so as to monitor the ambient temperature and control turbine power output so that as ambient temperature decreases the maximum supercharged summer-peaking power output is not exceeded.

20. **Claims 77-81** are rejected under 35 U.S.C. 103(a) as being unpatentable over ASME technical publication entitled "Benefits of Compressor Inlet Air Cooling For Gas Turbine Cogeneration Plants" to De Lucia et al. as applied to claims 77-80 in paragraph 7 above, and further in view of (4,667,465) to Munk.

As set forth above in the rejection of claims 77-80, De Lucia et al. discloses the invention substantially as claimed. De Lucia et al. does not disclose a system controller or processor monitoring at least one system parameter and controlling operation of at least one fogger.

Munk, Figures 1-8 discloses a processor (500) which is a general or special purpose digital or analog processor or a microprocessor such as sold by Zilog Corporation which receives an input from NO_x sensing unit (300) {The sensing unit can be of other types such as: temperature, O_2, CO, CO_2, H_2O, etc.} to generate control signals to control compressed air supply (291) and pressurized water supply (292) to fogging units (250). See Munk, Figures 1-8, and respective portions, abstract, col. 5 lines 3-63 of the detailed description.

It would have been obvious to an artisan of ordinary skill in the art at the time the invention was made to take the invention of De Lucia et al. and use as taught by Munk a system processor or microprocessor controller to monitor at least one system parameter and control the operation of at least one water fogger so as to monitor the ambient temperature and control turbine power output so that as ambient

temperature decreases the maximum supercharged summer-peaking power output is not exceeded.

21. **Claims 77-81** are rejected under 35 U.S.C. 103(a) as being unpatentable over (6,012,279) to Hines in view of article in Journal of Engineering for Gas Turbines and Power entitled "Advantages of Air Conditioning and Supercharging an LM6000 Gas Turbine Inlet" by Kolp et al. as applied to claims 77-80 in paragraph 9 above, and further in view of (4,667,465) to Munk.

As set forth above in the rejection of claims 77-80, Hines in view of Kolp et al. discloses the invention substantially as claimed. Hines in view of Kolp et al. does not disclose a system controller or processor monitoring at least one system parameter and controlling operation of at least one fogger.

Munk, Figures 1-8 discloses a processor (500) which is a general or special purpose digital or analog processor or a microprocessor such as sold by Zilog Corporation which receives an input from NO_x sensing unit (300) {The sensing unit can be of other types such as: temperature, O_2, CO,

CO_2, H_2O, etc.} to generate control signals to control compressed air supply (291) and pressurized water supply (292) to fogging units (250). See Munk, Figures 1-8, and respective portions, abstract, col. 5 lines 3-63 of the detailed description.

It would have been obvious to an artisan of ordinary skill in the art at the time the invention was made to take the invention of Hines in view of Kolp et al. and use as taught by Munk a system processor or microprocessor controller to monitor at least one system parameter and control the operation of at least one water fogger so as to monitor the ambient temperature and control turbine power output so that as ambient temperature decreases the maximum supercharged summer-peaking power output is not exceeded.

22. **Claims 77-81** are rejected under 35 U.S.C. 103(a) as being unpatentable over article in Journal of Engineering for Gas Turbines and Power entitled "Advantages of Air Conditioning and Supercharging an LM6000 Gas Turbine Inlet" by Kolp et al., as applied to claims 77-80 in paragraph 6 above, and further in view of article entitled "EPRI

Technology to Enhance Combustion Turbine Output" to Generation Group of EPRI as applied to claims 77-80 in paragraph 10 above, and further in view of (4,667,465) to Munk.

As set forth above in the rejection of claims 77-80, Kolp et al. in view of EPRI discloses the invention substantially as claimed. Kolp et al. in view of EPRI does not disclose a system controller or processor monitoring at least one system parameter and controlling operation of at least one fogger.

Munk, Figures 1-8 discloses a processor (500) which is a general or special purpose digital or analog processor or a microprocessor such as sold by Zilog Corporation which receives an input from NO_x sensing unit (300) {The sensing unit can be of other types such as: temperature, O_2, CO, CO_2, H_2O, etc.} to generate control signals to control compressed air supply (291) and pressurized water supply (292) to fogging units (250). See Munk, Figures 1-8, and respective portions, abstract, col. 5 lines 3-63 of the detailed description.

It would have been obvious to an artisan of ordinary skill in the art at the time the invention was made to take the invention of Kolp et al. in view

of EPRI and use as taught by Munk a system processor or microprocessor controller to monitor at least one system parameter and control the operation of at least one water fogger so as to monitor the ambient temperature and control turbine power output so that as ambient temperature decreases the maximum supercharged summer-peaking power output is not exceeded.

23. **Claims 77-81** are rejected under 35 U.S.C. 103(a) as being unpatentable over article in Journal of Engineering for Gas Turbines and Power entitled "Advantages of Air Conditioning and Supercharging an LM6000 Gas Turbine Inlet" by Kolp et al., as applied to claims 77-80 in paragraph 6 above, and further in view of (4,418,527) to Schlom et al. as applied to claims 77-80 in paragraph 11 above, and further in view of (4,667,465) to Munk.

As set forth above in the rejection of claims 77-80, Kolp et al. in view of Schlom et al. discloses the invention substantially as claimed. Kolp et al. in view of Schlom et al. does not disclose a system controller or processor

monitoring at least one system parameter and controlling operation of at least one fogger.

Munk, Figures 1-8 discloses a processor (500) which is a general or special purpose digital or analog processor or a microprocessor such as sold by Zilog Corporation which receives an input from NO_x sensing unit (300) {The sensing unit can be of other types such as: temperature, O_2, CO, CO_2, H_2O, etc.} to generate control signals to control compressed air supply (291) and pressurized water supply (292) to fogging units (250). See Munk, Figures 1-8, and respective portions, abstract, col. 5 lines 3-63 of the detailed description.

It would have been obvious to an artisan of ordinary skill in the art at the time the invention was made to take the invention of Kolp et al. in view of Schlom et al. and use as taught by Munk a system processor or microprocessor controller to monitor at least one system parameter and control the operation of at least one water fogger so as to monitor the ambient temperature and control turbine power output so that as ambient temperature decreases the maximum supercharged summer-peaking power output is not exceeded.

24. **Claims 77-81** are rejected under 35 U.S.C. 103(a) as being unpatentable over ASME technical publication entitled "Benefits of Compressor Inlet Air Cooling For Gas Turbine Cogeneration Plants" to De Lucia et al. as applied to claims 77-80 in paragraph 7 above, and further in view of (4,418,527) to Schlom et al. as applied to claims 77-80 in paragraph 12 above, and further in view of (4,667,465) to Munk.

As set forth above in the rejection of claims 77-80, De Lucia et al. in view of Schlom et al. discloses the invention substantially as claimed. De Lucia et al. in view of Schlom et al. does not disclose a system controller or processor monitoring at least one system parameter and controlling operation of at least one fogger.

Munk, Figures 1-8 discloses a processor (500) which is a general or special purpose digital or analog processor or a microprocessor such as sold by Zilog Corporation which receives an input from NO_x sensing unit (300) {The sensing unit can be of other types such as: temperature, O_2, CO, CO_2, H_2O, etc.} to generate control signals to control compressed air supply (291) and pressurized water supply (292) to fogging units (250). See Munk,

Figures 1-8, and respective portions, abstract, col. 5 lines 3-63 of the detailed description.

It would have been obvious to an artisan of ordinary skill in the art at the time the invention was made to take the invention of De Lucia et al. in view of Schlom et al. and use as taught by Munk a system processor or microprocessor controller to monitor at least one system parameter and control the operation of at least one water fogger so as to monitor the ambient temperature and control turbine power output so that as ambient temperature decreases the maximum supercharged summer-peaking power output is not exceeded.

25. Claims 77-81 are rejected under 35 U.S.C. 103(a) as being unpatentable over ASME technical publication entitled "Benefits of Compressor Inlet Air Cooling For Gas Turbine Cogeneration Plants" to De Lucia et al. as applied to claims 77-80 in paragraph 7 above, and further in view of article entitled "EPRI Technology to Enhance Combustion Turbine Output" to Generation Group of EPRI as applied to claims 77-80 in paragraph 13 above, and further in view of (4,667,465) to Munk.

As set forth above in the rejection of claims 77-80, De Lucia et al. in view of EPRI discloses the invention substantially as claimed. De Lucia et al. in view of EPRI does not disclose a system controller or processor monitoring at least one system parameter and controlling operation of at least one fogger.

Munk, Figures 1-8 discloses a processor (500) which is a general or special purpose digital or analog processor or a microprocessor such as sold by Zilog Corporation which receives an input from NO_x sensing unit (300) {The sensing unit can be of other types such as: temperature, O_2, CO, CO_2, H_2O, etc.} to generate control signals to control compressed air supply (291) and pressurized water supply (292) to fogging units (250). See Munk, Figures 1-8, and respective portions, abstract, col. 5 lines 3-63 of the detailed description.

It would have been obvious to an artisan of ordinary skill in the art at the time the invention was made to take the invention of De Lucia et al. in view of EPRI and use as taught by Munk a system processor or microprocessor controller to monitor at least one system parameter and control the operation of at least one water fogger so as to monitor the

ambient temperature and control turbine power output so that as ambient temperature decreases the maximum supercharged summer-peaking power output is not exceeded.

26. **Claims 77-81** rejected under 35 U.S.C. 103(a) as being unpatentable over (GB 2280224 A) to Bronicki et al. as applied to claims 77-80 in paragraph 5 above, and further in view of (4,418,527) to Schlom et al. as applied to claims 77-80 in paragraph 14 above, and further in view of (4,667,465) to Munk.

As set forth above in the rejection of claims 77-80, Bronicki et al. in view of Schlom et al. discloses the invention substantially as claimed. Bronicki et al. in view of Schlom et al. does not disclose a system controller or processor monitoring at least one system parameter and controlling operation of at least one fogger.

Munk, Figures 1-8 discloses a processor (500) which is a general or special purpose digital or analog processor or a microprocessor such as sold by Zilog Corporation which receives an input from NO_x sensing unit (300) {The sensing unit can be of other types such as: temperature, O_2, CO,

CO_2, H_2O, etc.} to generate control signals to control compressed air supply (291) and pressurized water supply (292) to fogging units (250). See Munk, Figures 1-8, and respective portions, abstract, col. 5 lines 3-63 of the detailed description.

It would have been obvious to an artisan of ordinary skill in the art at the time the invention was made to take the invention of Bronicki et al. in view of Schlom et al. and use as taught by Munk a system processor or microprocessor controller to monitor at least one system parameter and control the operation of at least one water fogger so as to monitor the ambient temperature and control turbine power output so that as ambient temperature decreases the maximum supercharged summer-peaking power output is not exceeded.

27. **Claims 77-81** are rejected under 35 U.S.C. 103(a) as being unpatentable over ASME publication entitled "Supercharging of Gas Turbines by Forced Draft Fans With Evaporative Intercooling" to R. W. Foster-Pegg as applied to claims 77-80 in paragraph 4 above, and further in view of article entitled "EPRI Technology to Enhance Combustion Turbine

Output" to Generation Group of EPRI as applied to claims 77-80 in paragraph 15 above, and further in view of (4,667,465) to Munk.

As set forth above in the rejection of claims 77-80, R. W. Foster-Pegg in view of EPRI discloses the invention substantially as claimed. R. W. Foster-Pegg in view of EPRI does not disclose a system controller or processor monitoring at least one system parameter and controlling operation of at least one fogger.

Munk, Figures 1-8 discloses a processor (500) which is a general or special purpose digital or analog processor or a microprocessor such as sold by Zilog Corporation which receives an input from NO_x sensing unit (300) {The sensing unit can be of other types such as: temperature, O_2, CO, CO_2, H_2O, etc.} to generate control signals to control compressed air supply (291) and pressurized water supply (292) to fogging units (250). See Munk, Figures 1-8, and respective portions, abstract, col. 5 lines 3-63 of the detailed description.

It would have been obvious to an artisan of ordinary skill in the art at the time the invention was made to take the invention of R. W. Foster-Pegg in view of EPRI and use as taught by Munk a system processor or

microprocessor controller to monitor at least one system parameter and control the operation of at least one water fogger so as to monitor the ambient temperature and control turbine power output so that as ambient temperature decreases the maximum supercharged summer-peaking power output is not exceeded.

****The claims were examined with the broadest reasonable interpretation of the claimed structural/functional subject matter. A proper and acceptable response to this office action requires addressing all issues/objections/rejections invoked in this office action.****

CONCLUSION

28. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following selected patents and technical literature is cited to further show the state of the art in supercharged gas turbine generation plants and related technology in

general where the not all obvious salient features of the patents are disclosed as follows:

- US Patent No. 3,796,045 to Foster-Pegg discloses a gas turbine power plant generating electricity using a supercharger.
- Internet article WAC discloses using water fogging spray to cool input air stream to gas turbine to increase power output of turbine system.

****Please review the above patent and article when amending the current claims for they contain structural/functional material that read on the present claims.****

29. Any inquiry concerning this communication from the examiner should be directed to **John F. Belena, Ph.D. whose telephone number is (703) 305-3533**. The examiner can normally be reached on Monday through Thursday from 9:00 AM to 5:00 PM. The examiner can also be reached on

alternate Fridays from 9:00 AM to 5:00 PM. If attempts to reach the examiner by telephone are unsuccessful, the **examiner's supervisor, Timothy S. Thorpe, can be reached on (703) 308-0102**. The fax number for this Group Art Unit 3746 is (703) 872-9302. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group Art Unit 3746 receptionist whose telephone number is (703) 308-0861.

John E. Belena, Ph.D.
GAU 3746
6/2/03

CHARLES G. FREAY
PRIMARY EXAMINER

UNITED STATES
PATENT AND
TRADEMARK OFFICE